CLAIMS

We Claim:

1. A method for determining a turn-on energy of a printhead comprising:

firing the printhead at a first firing frequency over an initial range of print energies to detect an approximate range of print energies in which the turn-on energy is located; and,

firing the printhead at a second firing frequency over the approximate range of print energies in which the turn-on energy is located in order to determine a value for the turn-on energy of the printhead, wherein the second firing frequency is higher than the first firing frequency.

2. A method as in claim 1 wherein the second firing frequency is more than twice the first firing frequency.

3. A method as in claim 1 wherein:

firing the printhead at the first firing frequency over the initial range of print energies comprises passing a first plurality of substantially constant voltage electric signals through heater resistors within the printhead and varying a pulse width of the first plurality of substantially constant voltage electric signals within a first range of pulse widths; and

firing the printhead at the second firing frequency over the approximate range of print energies in which the turn-on energy is located comprises passing a second plurality of substantially constant voltage electric signals through the heater resistors and varying a pulse width of the second plurality of substantially constant voltage electric signals within a second range of pulse widths narrower than the first range of pulse widths.

4. A method as in claim 3 wherein:

varying the pulse width of the first plurality of substantially constant voltage electric signals comprises reducing a pulse width of each successive signal in the first plurality of substantially constant voltage electric signals; and,

varying the pulse width of the second plurality of substantially constant voltage electric signals comprises reducing a pulse width of each successive signal in the second plurality of substantially constant voltage electric signals.

5. A method as in claim 3 wherein:

varying the pulse width of the first plurality of substantially constant voltage electric signals comprises reducing a pulse width of each successive signal in the first plurality of substantially constant voltage electric signals by a first amount;

varying the pulse width of the second plurality of substantially constant voltage electric signals comprises reducing a pulse width of each successive signal in the second plurality of substantially constant voltage electric signals by a second amount; and,

the second amount is smaller than the first amount.

6. A method as in claim 1 wherein:

when firing the printhead at the first firing frequency, different print energies are obtained by varying pulse width of an electric signal passed through heater resistors within the printhead; and,

when firing the printhead at the second firing frequency, different print energies are obtained by varying pulse width of an electric signal passed through heater resistors within the printhead.

7. A method as in claim 1 additionally comprising:

firing ink at additional print frequencies in order to more accurately determine the value for the turn-on energy of the printhead.

8. A method as in claim 1 wherein the approximate range of print energies in which the turn-on energy is located is detected by monitoring temperature of the printhead in order to approximate a range of pulse widths where a minimum temperature of the printhead occurs.

9. A method as in claim 1 wherein the value for the turn-on energy is determined by monitoring temperature of the printhead in order to determine a pulse width where a minimum temperature of the printhead occurs.

10. A method for determining a turn-on energy of a printhead comprising:

firing the printhead at a first firing frequency over an initial range of print energies to detect an approximate range of print energies in which the turn-on energy is located, including:

passing a first plurality of substantially constant voltage electric signals through heater resistors within the printhead and reducing a pulse width of each successive signal in the first plurality of substantially constant voltage electric signals; and,

firing the printhead at a second firing frequency over the approximate range of print energies in which the turn-on energy is located in order to determine a value for the turn-on energy of the printhead, including:

passing a second plurality of substantially constant voltage electric signals through the heater resistors and reducing a pulse width of each successive signal in the second plurality of substantially constant voltage electric signals by a second amount;

wherein the second firing frequency is higher than the first firing frequency.

11. A method as in claim 10 wherein the second firing frequency is more than twice the first firing frequency.

12. A method as in claim 10 additionally comprising:

firing ink at additional print frequencies in order to more accurately determine the value for the turn-on energy of the printhead.

13. A method as in claim 10 wherein the second amount is smaller than the first amount.

14. A method as in claim 10, wherein the approximate range of print energies in which the turn-on energy is located is detected by monitoring temperature of the printhead in order to approximate a range of pulse widths where a minimum temperature of the printhead occurs.

15. A method as in claim 10, wherein the value for the turn-on energy is determined by monitoring temperature of the printhead in order to determine a pulse width where a minimum temperature of the printhead occurs.

16. A device comprising:

a printhead used to eject ink; and,

a controller that controls ejection of ink from the printhead, wherein the controller determines a turn-on energy of the printhead by causing the printhead to fire ink at a first firing frequency over an initial range of print energies to detect an approximate range of print energies in which the turn-on energy is located, and by causing the printhead to fire ink at a second firing frequency over the approximate range of print energies in which the turn-on energy is located in order to determine a value for the turn-on energy of the printhead, wherein the second firing frequency is higher than the first firing frequency.

17. A device as in claim 16 wherein the printhead includes a temperature sensor used to detect approximate temperature of the printhead.

18. A device as in claim 16 wherein the second firing frequency is more than twice the first firing frequency.

19. A device as in claim 16 wherein when the printhead fires at the first firing frequency, different print energies are obtained by varying pulse width of an electric signal passed through heater resistors within the printhead.

20. A device as in claim 16 wherein when the printhead fires at the second firing frequency, different print energies are obtained by varying pulse width of an electric signal passed through heater resistors within the printhead.

21. A device as in claim 16:

wherein when the printhead fires at the first firing frequency, different print energies are obtained by the printhead fires using a first plurality of pulse widths of an electric signal passed through heater resistors within the printhead;

wherein when the printhead fires at the second firing frequency, different print energies are obtained by the printhead fires using a second plurality of pulse widths of the electric signal passed through heater resistors within the printhead; and,

wherein the second plurality of pulse widths are spaced closer together than the first plurality of pulse widths.

22. A device as in claim 16, wherein the device is a printer.

23. A device as in claim 16, wherein the device is used within a printer.

24. A device as in claim 16 wherein the controller causes the printhead to fire ink at additional print frequencies in order to more accurately determine the value for the turn-on energy of the printhead.

25. A device as in claim 16 wherein the approximate range of print energies in which the turn-on energy is located is detected by monitoring temperature of the printhead in order to approximate a range of pulse widths where a minimum temperature of the printhead occurs.

26. A device as in claim 16 wherein the value for the turn-on energy is determined by monitoring temperature of the printhead in order to determine a pulse width where a minimum temperature of the printhead occurs.

27. A device comprising:

a printhead used to eject ink; and,

a controller that controls ejection of ink from the printhead, wherein the controller determines a turn-on energy of the printhead by causing the printhead to fire ink at a first firing frequency over an initial range of print energies to detect an approximate range of print energies in which the turn-on energy is located, including passing a first plurality of substantially constant voltage electric signals through heater resistors within the printhead and reducing a pulse width of each successive signal in the first plurality of substantially constant voltage electric signals, and by causing the printhead to fire ink at a second firing frequency over the approximate range of print energies in which the turn-on energy is located in order to determine a value for the turn-on energy of the printhead, including passing a second plurality of substantially constant voltage electric signals through the heater resistors and reducing a pulse width of each successive signal in the second plurality of substantially constant voltage electric signals by a second amount;

wherein the second firing frequency is higher than the first firing frequency.

28. A device as in claim 27 wherein the printhead includes a temperature sensor used to detect approximate temperature of the printhead.

29. A device as in claim 27 wherein the second firing frequency is more than twice the first firing frequency.

30. A device as in claim 27, wherein the second amount is smaller than the first amount.

31. A device as in claim 27, wherein the device is a printer.

32. A device as in claim 27, wherein the device is used within a printer.

33. A device as in claim 27 wherein the controller causes the printhead to fire ink at additional print frequencies in order to more accurately determine the value for the turn-on energy of the printhead.

34. A device as in claim 27, wherein the approximate range of print energies in which the turn-on energy is located is detected by monitoring temperature of the printhead in order to approximate a range of pulse widths where a minimum temperature of the printhead occurs.

35. A device as in claim 27, wherein the value for the turn-on energy is determined by monitoring temperature of the printhead in order to determine a pulse width where a minimum temperature of the printhead occurs.

36. A device comprising:

means for ejecting ink; and,

means for controlling the ejection of ink, wherein the controller determines a turn-on energy of the means for ejecting ink by causing the means for ejecting ink to fire ink at a first firing frequency over an initial range of print energies to detect an approximate range of print energies in which the turn-on energy is located, and by causing the means for ejecting ink to fire ink at a second firing frequency over the approximate range of print energies in which the turn-on energy is located in order to determine a value for the turn-on energy of the means for ejecting ink, wherein the second firing frequency is higher than the first firing frequency.

37. Storage media that stores programming which when executed on a printing device, performs a method for determining turn-on energy of a printhead, the method comprising:

firing the printhead at a first firing frequency over an initial range of print energies to detect an approximate range of print energies in which the turn-on energy is located; and,

firing the printhead at a second firing frequency over the approximate range of print energies in which the turn-on energy is located in order to determine a value for the turn-on energy of the printhead, wherein the second firing frequency is higher than the first firing frequency.

38. Storage media as in claim 37 wherein the second firing frequency is more than twice the first firing frequency.

39. Storage media as in claim 37 wherein:

firing the printhead at the first firing frequency over the initial range of print energies comprises passing a first plurality of substantially constant voltage electric signals through heater resistors within the printhead and varying a pulse width of the first plurality of substantially constant voltage electric signals within a first range of pulse widths; and

firing the printhead at the second firing frequency over the approximate range of print energies in which the turn-on energy is located comprises passing a second plurality of substantially constant voltage electric signals through the heater resistors and varying a pulse width of the second plurality of substantially constant voltage electric signals within a second range of pulse widths narrower than the first range of pulse widths.

40. Storage media as in claim 39 wherein:

varying the pulse width of the first plurality of substantially constant voltage electric signals comprises reducing a pulse width of each successive signal in the first plurality of substantially constant voltage electric signals; and,

varying the pulse width of the second plurality of substantially constant voltage electric signals comprises reducing a pulse width of each successive signal in the second plurality of substantially constant voltage electric signals.

41. Storage media as in claim 39, wherein:

varying the pulse width of the first plurality of substantially constant voltage electric signals comprises reducing a pulse width of each successive signal

in the first plurality of substantially constant voltage electric signals by a first amount;

varying the pulse width of the second plurality of substantially constant voltage electric signals comprises reducing a pulse width of each successive signal in the second plurality of substantially constant voltage electric signals by a second amount; and,

the second amount is smaller than the first amount.

42. Storage media as in claim 37, wherein the approximate range of print energies in which the turn-on energy is located is detected by monitoring temperature of the printhead in order to approximate a range of pulse widths where a minimum temperature of the printhead occurs.

43. Storage media as in claim 37, wherein the value for the turn-on energy is determined by monitoring temperature of the printhead in order to determine a pulse width where a minimum temperature of the printhead occurs.

44. Storage media that stores programming which when executed on a printing device, performs a method for determining turn-on energy of a printhead, the method comprising:

firing the printhead at a first firing frequency over an initial range of print energies to detect an approximate range of print energies in which the turn-on energy is located, including:

passing a first plurality of substantially constant voltage electric signals through heater resistors within the printhead and reducing a pulse width of each successive signal in the first plurality of substantially constant voltage electric signals; and,

firing the printhead at a second firing frequency over the approximate range of print energies in which the turn-on energy is located in order to determine a value for the turn-on energy of the printhead, including:

passing a second plurality of substantially constant voltage electric signals through the heater resistors and reducing a pulse width of each successive

signal in the second plurality of substantially constant voltage electric signals by a second amount;

wherein the second firing frequency is higher than the first firing frequency.

45. Storage media as in claim 44 wherein the second firing frequency is more than twice the first firing frequency.

46. Storage media as in claim 45 additionally comprising:

firing ink at additional print frequencies in order to more accurately determine the value for the turn-on energy of the printhead.

47. Storage media as in claim 45 wherein the second amount is smaller than the first amount.

48. Storage media as in claim 44, wherein the approximate range of print energies in which the turn-on energy is located is detected by monitoring temperature of the printhead in order to approximate a range of pulse widths where a minimum temperature of the printhead occurs.

49. Storage media as in claim 44, wherein the value for the turn-on energy is determined by monitoring temperature of the printhead in order to determine a pulse width where a minimum temperature of the printhead occurs.